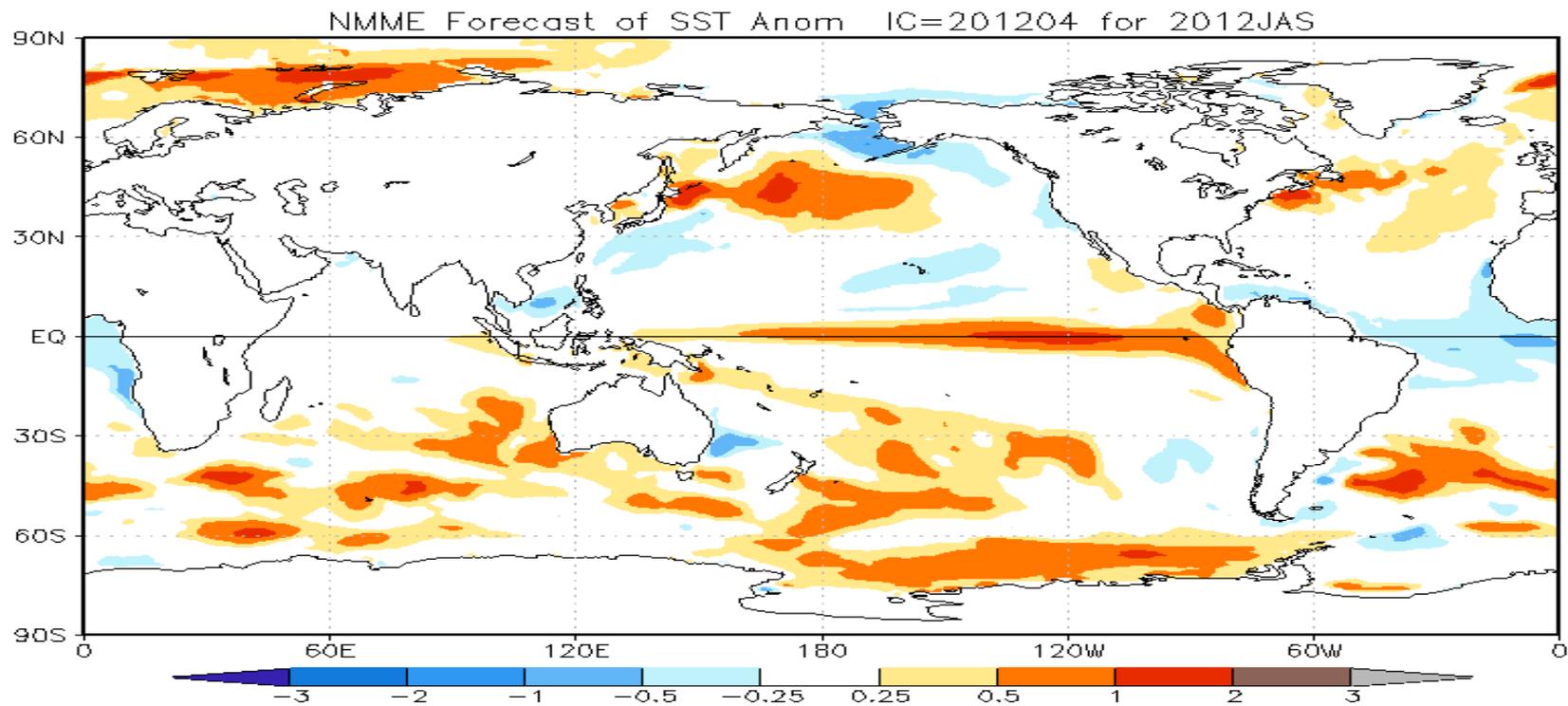


NMME as a Platform for US Modeling Collaboration

The NMME Team



Outline

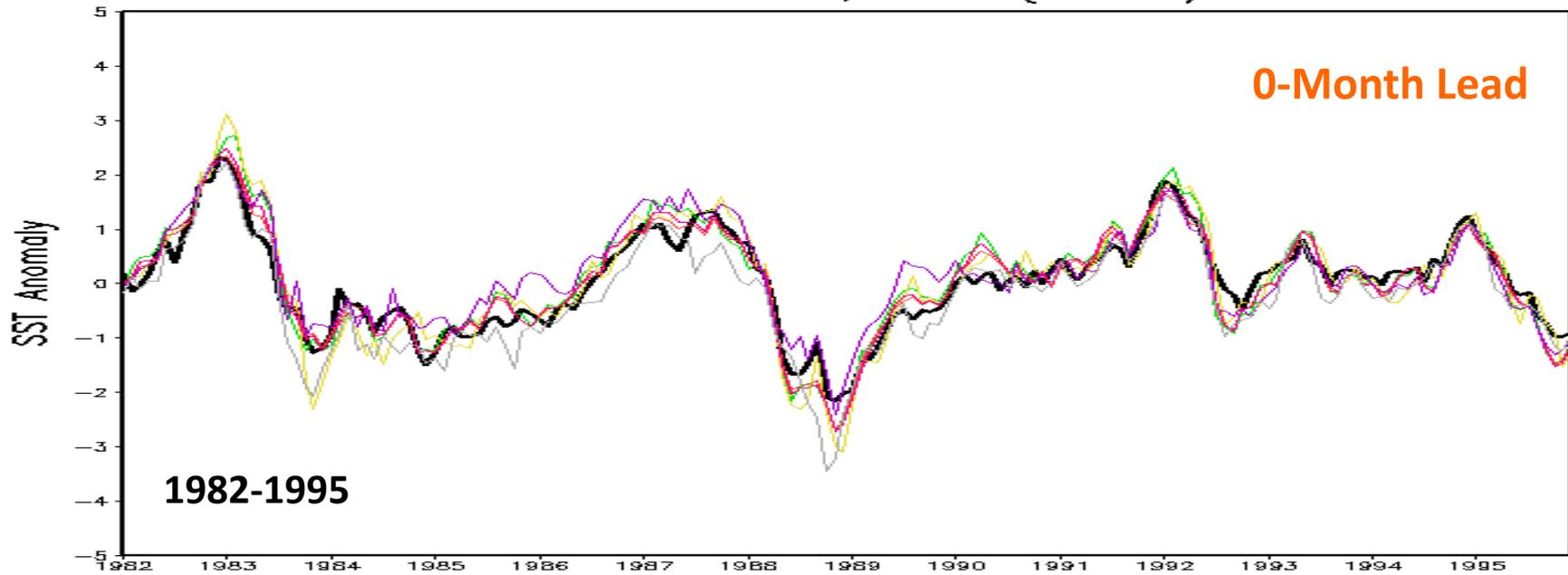
- **Describe NMME Experiment**
 - Assessment of Retrospective Forecast Quality
 - Status
- **NMME as the “Control” Experiment**
 - Predictability Research: e.g., South East US Drought
 - Model Evaluation/Development
 - Multi-Model Ensembles
 - Initialization Strategies: e.g., Land, Ocean

NMME Partners

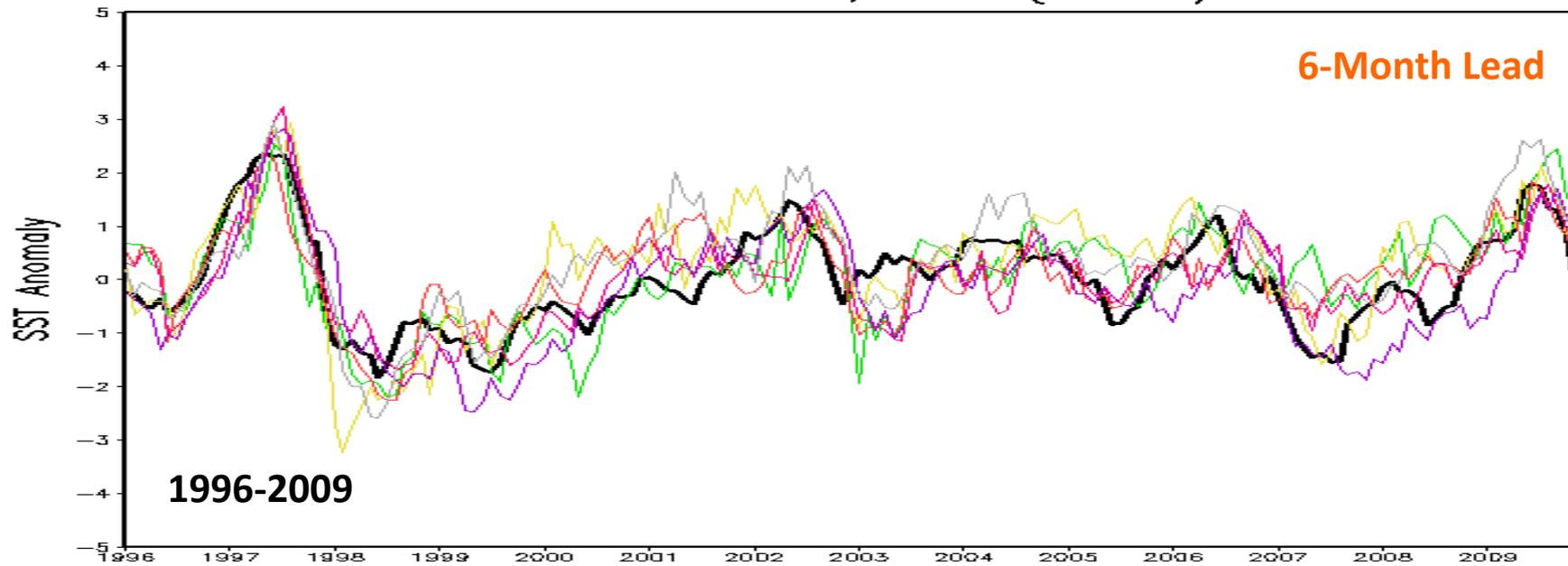
(Lot's of Leveraging!!)

- **University of Miami – RSMAS**
- **Nation Center for Atmospheric Research (NCAR)**
- **Center for Ocean-Land-Atmosphere Studies (COLA)**
- **International Research Institute for Climate and Society (IRI)**
- **University of Colorado – CIRES**
- **NASA – GMAO**
- **NOAA/NCEP/EMC/CPC**
- **NOAA/GFDL**
- **Canadian Meteorological Centre (Soon)**
- **Princeton University**

NINO3.4 SST Anomalies, Obs (Black) vs. NMME

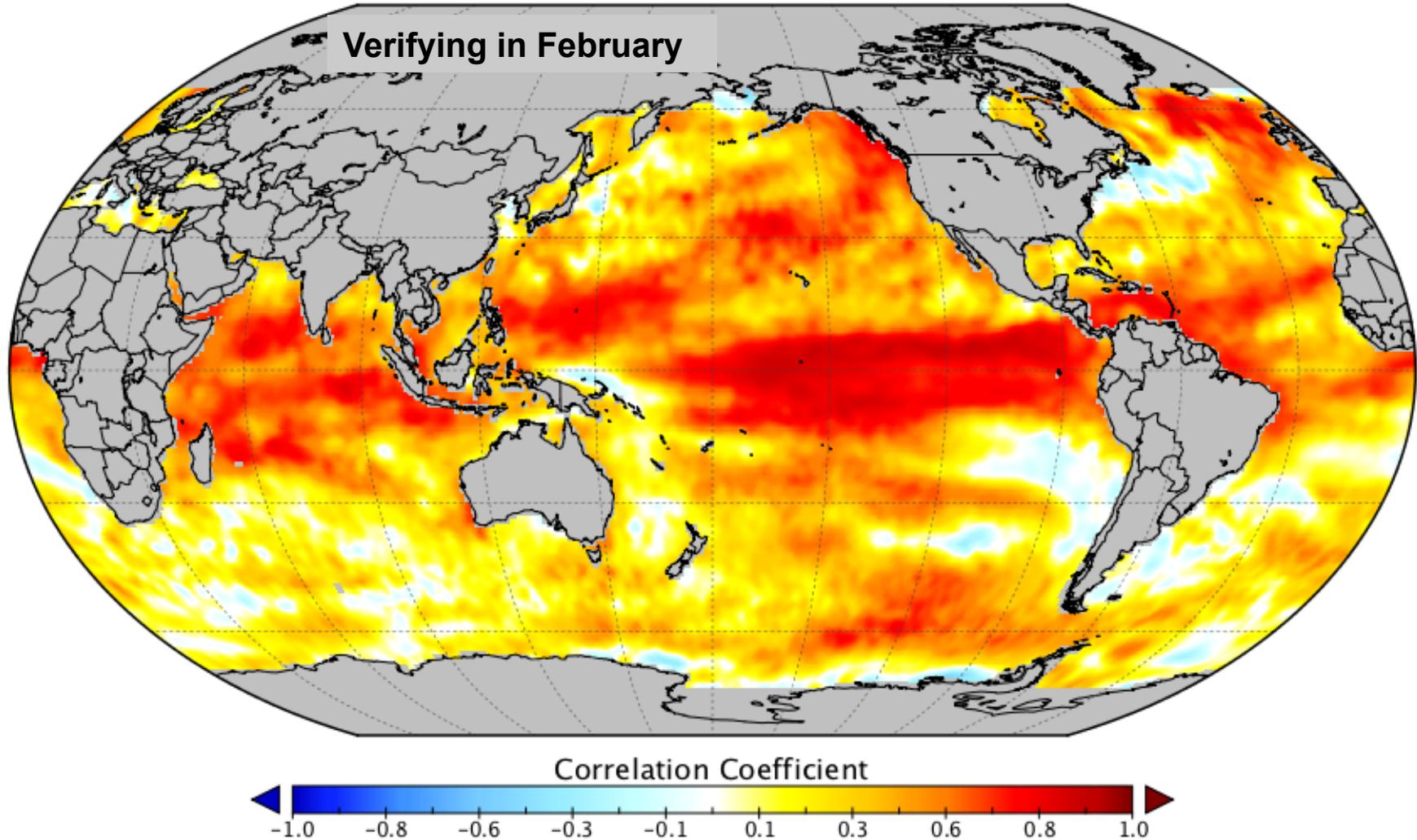


NINO3.4 SST Anomalies, Obs (Black) vs. NMME



(Preliminary) Hindcast Quality Assessment

US NMME SSTA Correlation Coefficient
6 Month Lead August Initial Conditions (1982-2010)

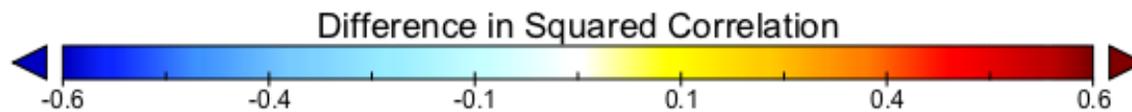
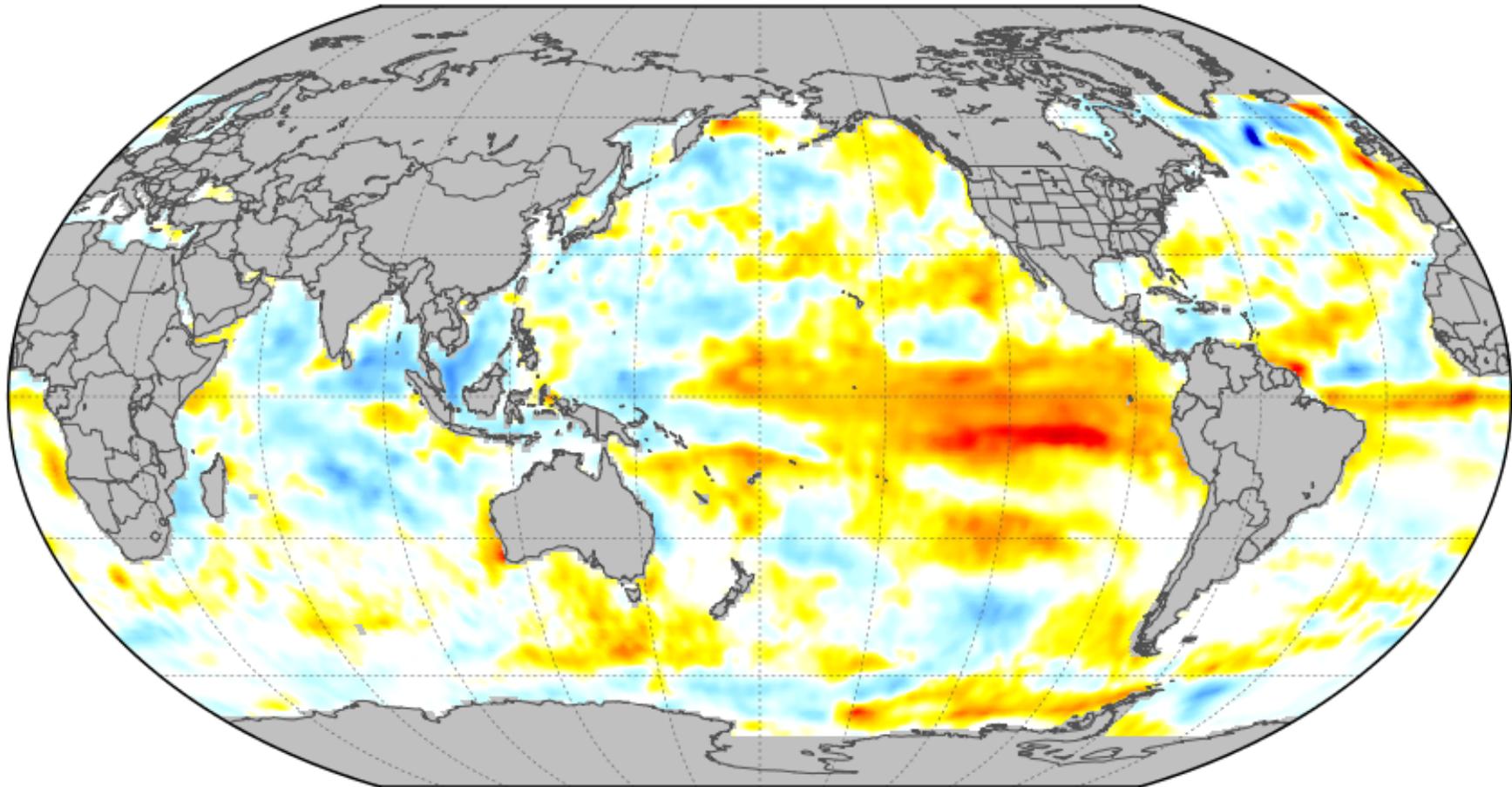


Each Ensemble Member from Each Model Weighted Equally – 83 Ensemble Members

Complementary Correlation

CFSv2 vs. All Others (24 Member Ensembles)

Lead Time 6 Months (August Initial Conditions)

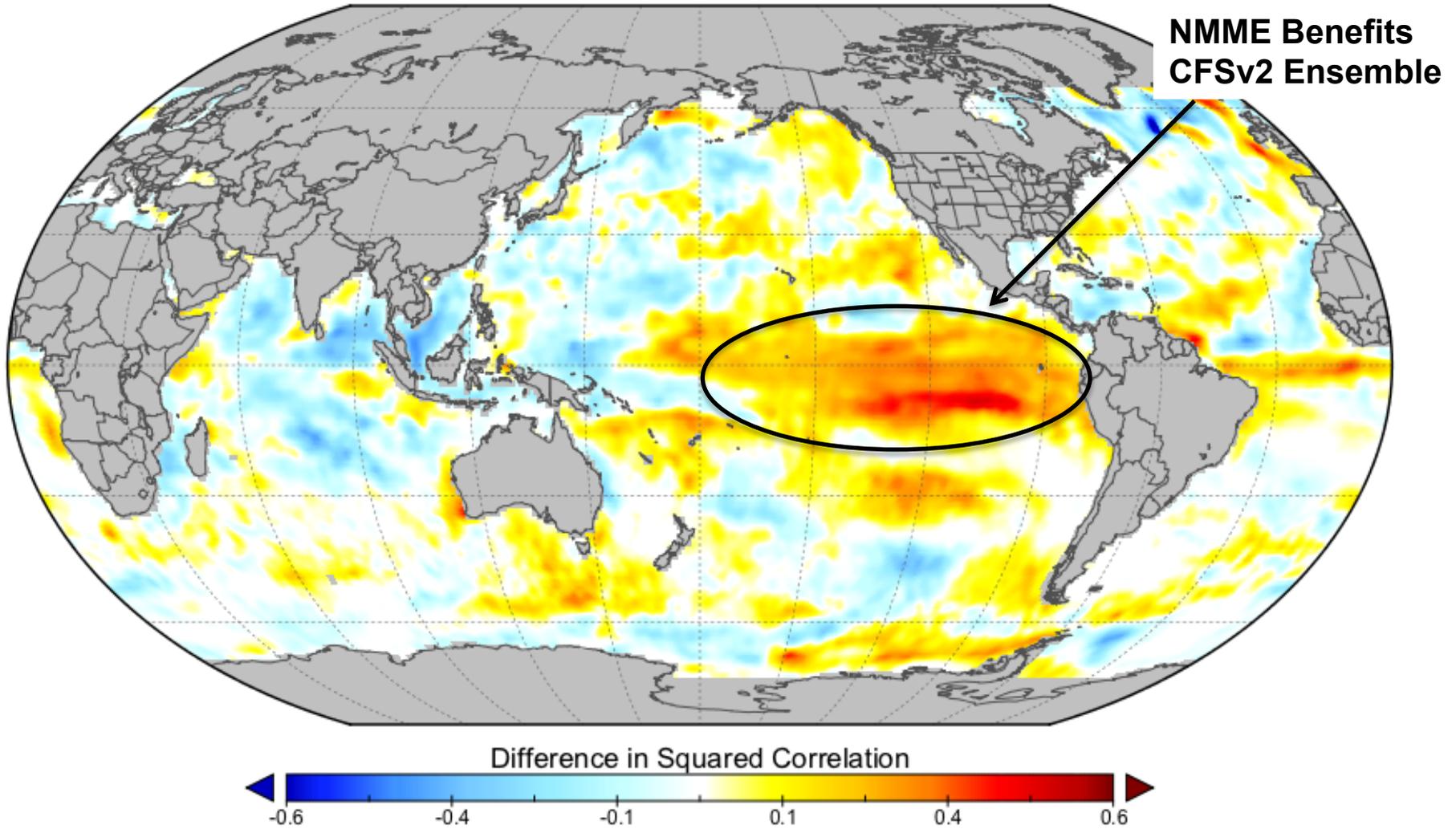


CFSv2(24) vs. CCSM3(4)+IRIa(4)+IRId(4)+CM2.1(4)+GEOS5(4)+CFSv1(4)

Complementary Correlation

CFSv2 vs. All Others (24 Member Ensembles)

Lead Time 6 Months (August Initial Conditions)

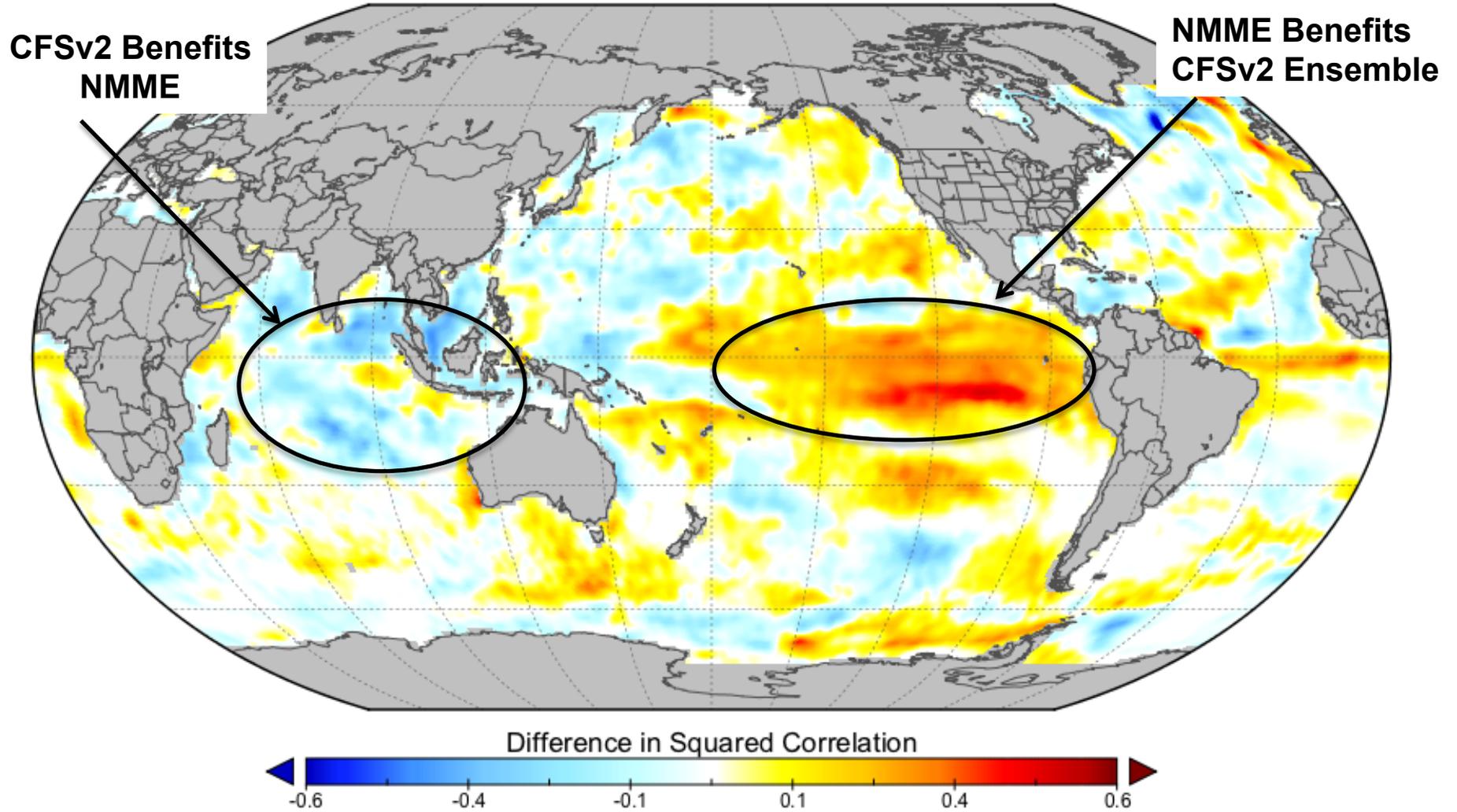


CFSv2(24) vs. CCSM3(4)+IRIa(4)+IRId(4)+CM2.1(4)+GEOS5(4)+CFSv1(4)

Complementary Correlation

CFSv2 vs. All Others (24 Member Ensembles)

Lead Time 6 Months (August Initial Conditions)

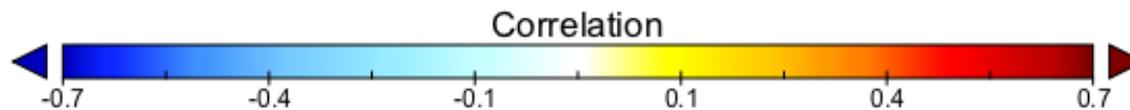
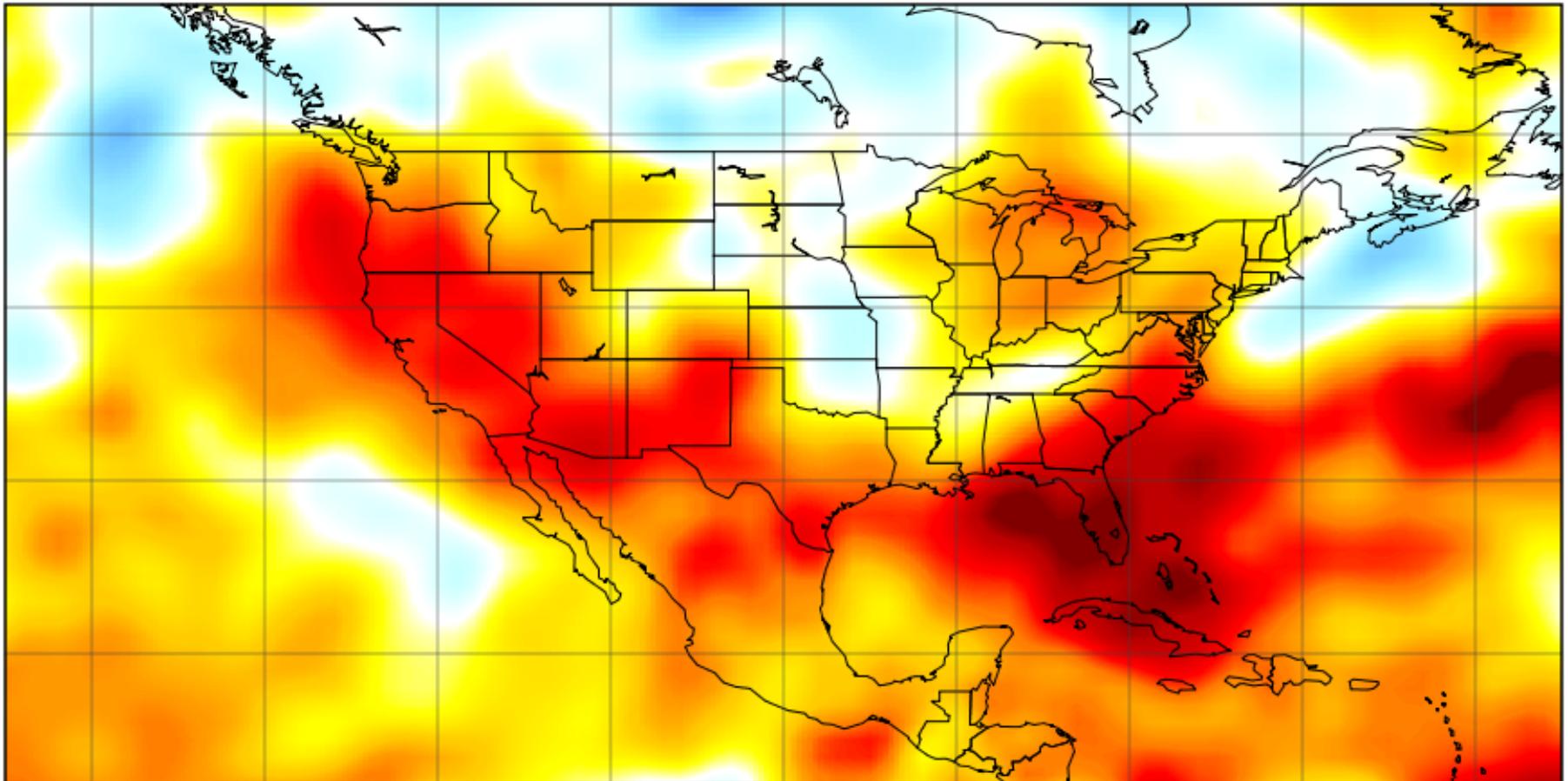


CFSv2(24) vs. CCSM3(4)+IRIa(4)+IRId(4)+CM2.1(4)+GEOS5(4)+CFSv1(4)

(Preliminary) Hindcast Quality Assessment

NMME Precipitation Correlation 2 Month Lead (December IC)

Each ensemble member weighted equally



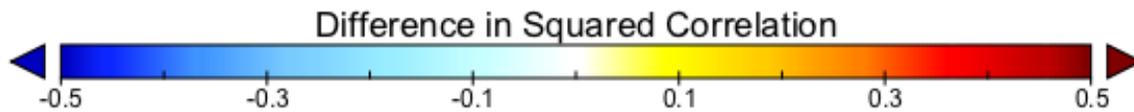
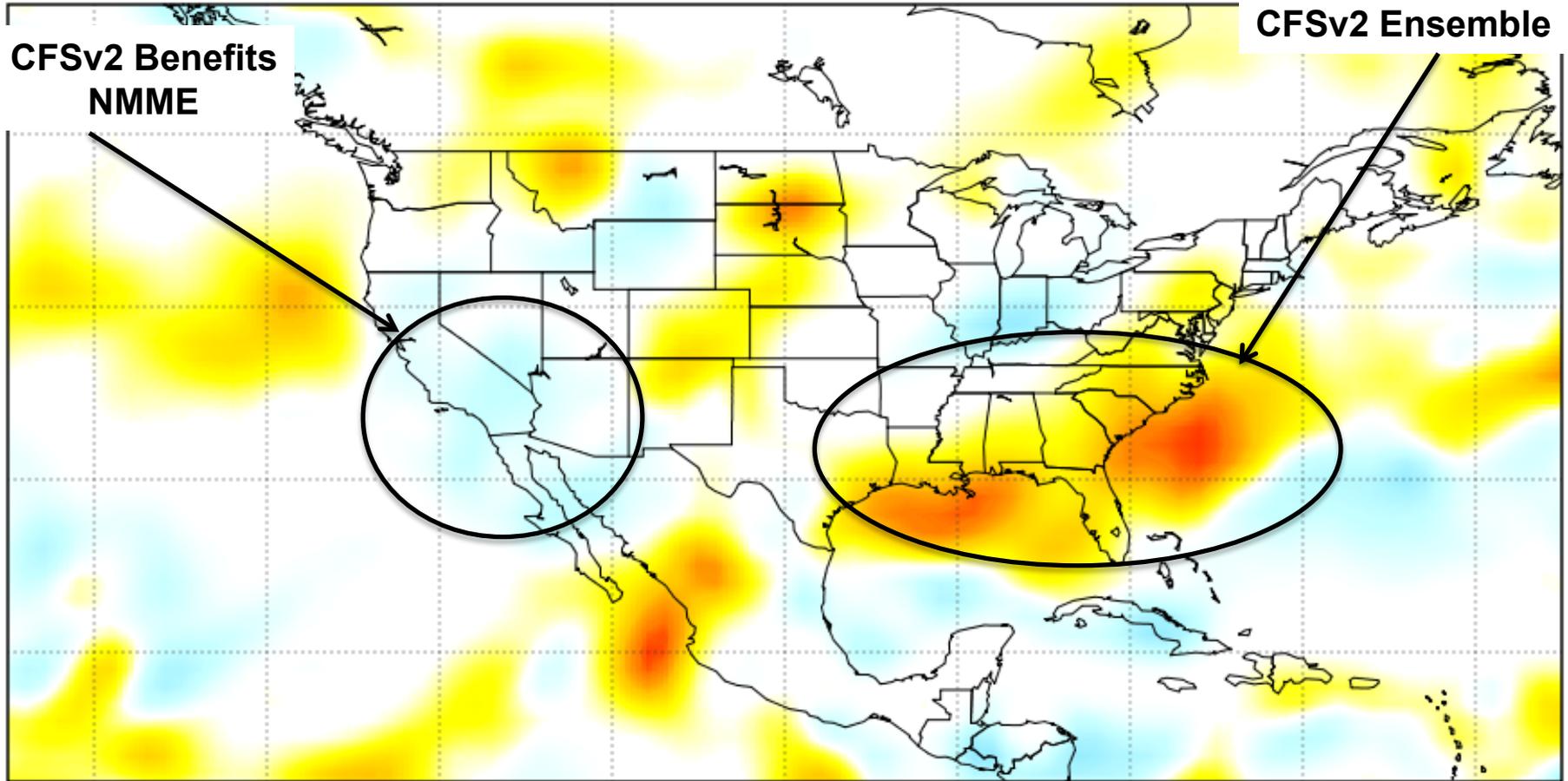
Each Ensemble Member from Each Model Weighted Equally – 83 Ensemble Members

CFSv2 vs. All Others (24 Member Ensembles)

Lead Time 6 Months (August Initial Conditions)

**NMME Benefits
CFSv2 Ensemble**

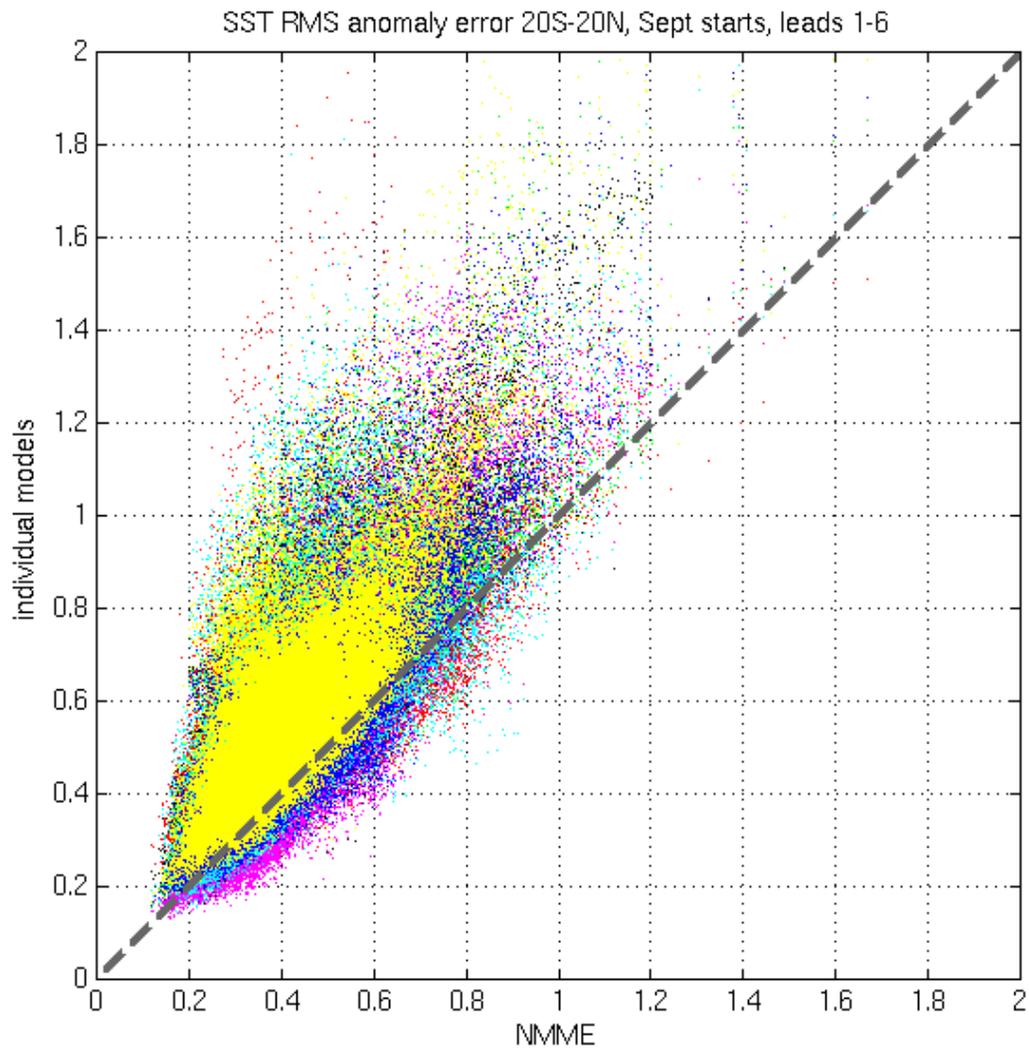
**CFSv2 Benefits
NMME**



CFSv2(24) vs. CCSM3(4)+IRIa(4)+IRId(4)+CM2.1(4)+GEOS5(4)+CFSv1(4)

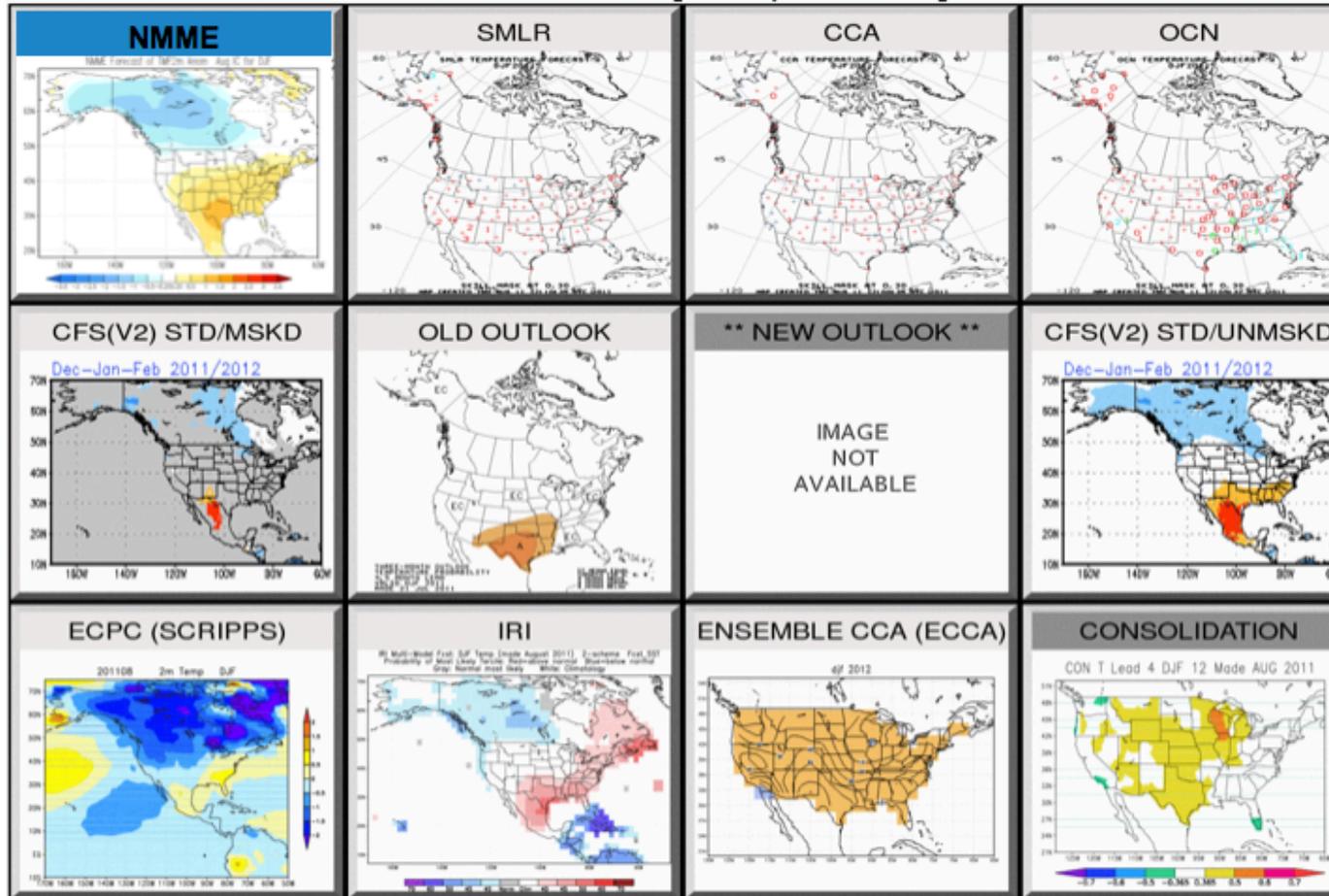
Area Averaged Correlation (R^2) Over North America: Model Ranks

	Mod A	Mod B	Mod C	Mod D	Mod E	Mod F	Mod G	NMME
JFM P (August IC)	4	6	5	8	7	3	2	1
JFM T2m (August IC)	3	1	5	6	7	4	8	2
MJJ P (December IC)	5	7	1	2	8	6	3	4
MJJ T2m (December IC)	6	1	3	4	8	7	5	2
Mean Rank	4.5	3.75	3.5	5.0	7.5	5.0	4.5	2.2



M O D E L S	Winning Percentage	
	CM2.1	35%
	CFSv1	29%
	IRI-Direct	29%
	IRI-Anom	30%
	GEOS5	35%
	CFSv2	48%
	CCSM3	26%

DJF Season [Temperature]



13

CPC Seasonal Prognostic Map Discussion (PMD):

“PROGNOSTIC TOOLS USED FOR U.S. TEMPERATURE AND PRECIPITATION OUTLOOKS OUTLOOKS FOR JFM THROUGH AMJ 2012 WERE PRIMARILY BASED ON THE NEW NATIONAL MULTI-MODEL ENSEMBLE MEAN FORECAST (NMME). THE FORECASTS STRONGLY AGREE WITH ...”

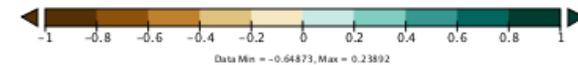
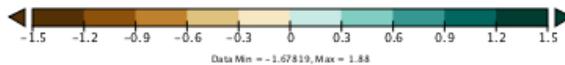
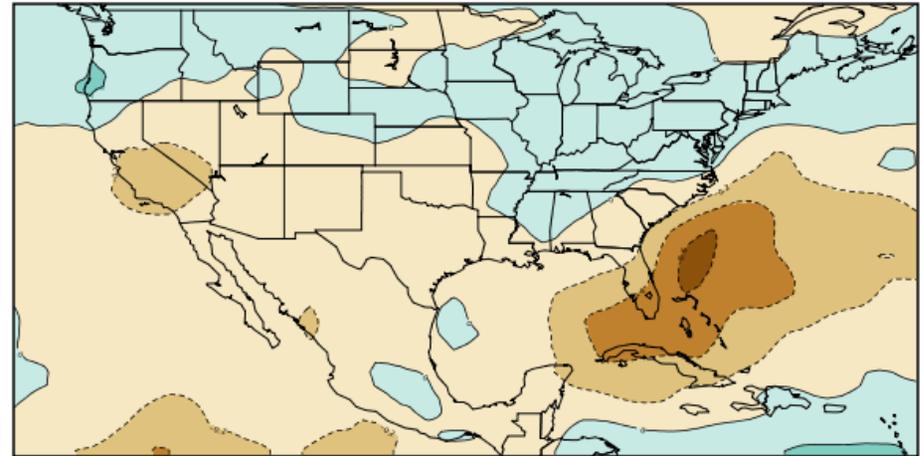
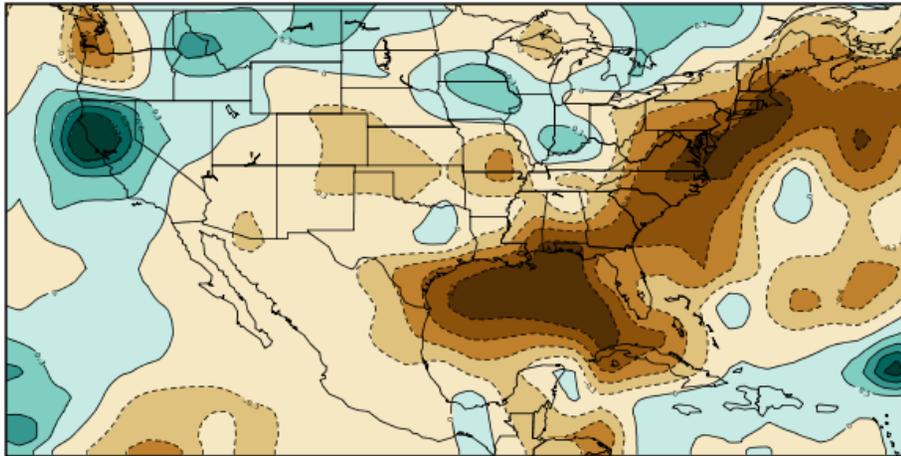
NMME as a Modeling Test-Bed

- **NMME as the “Control” Experiment**
 - Predictability Research: e.g., South East US Drought
 - Model Evaluation/Development
 - Multi-Model Ensembles
 - Initialization Strategies: e.g., Land, Ocean

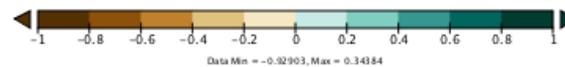
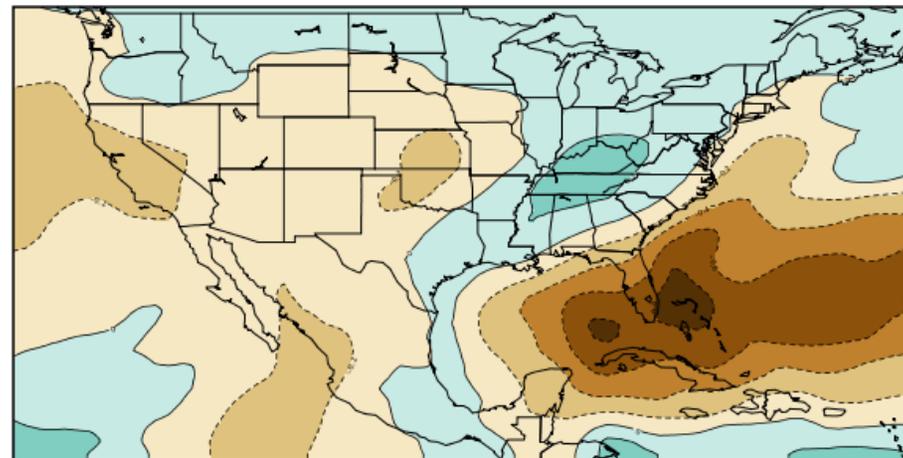
FMA2006 CMAP Precipitation Anomaly vs. All Model, All Ensemble Average FMA2006 (Aug2005 and Dec2005 IC) Precipitation Anomaly (*note color scale change for model images)

CMAP Precipitation Anomaly for FMA 2006

All Model, All Ensemble Average of Aug2005 IC, FMA 2006 Seasonal Average of Precip Anomalies

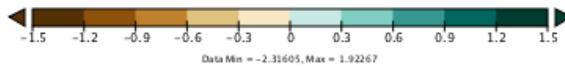
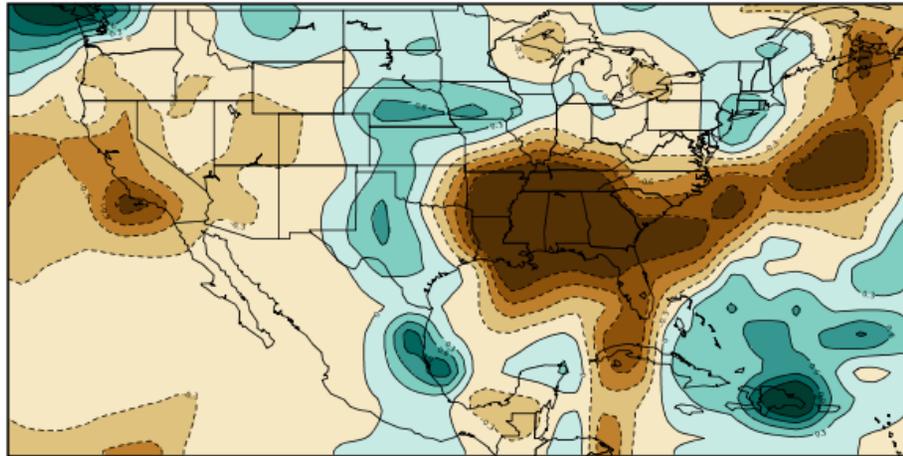


All Model, All Ensemble Average of Dec2005 IC, FMA 2006 Seasonal Average of Precip Anomalies

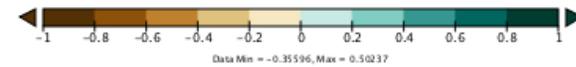
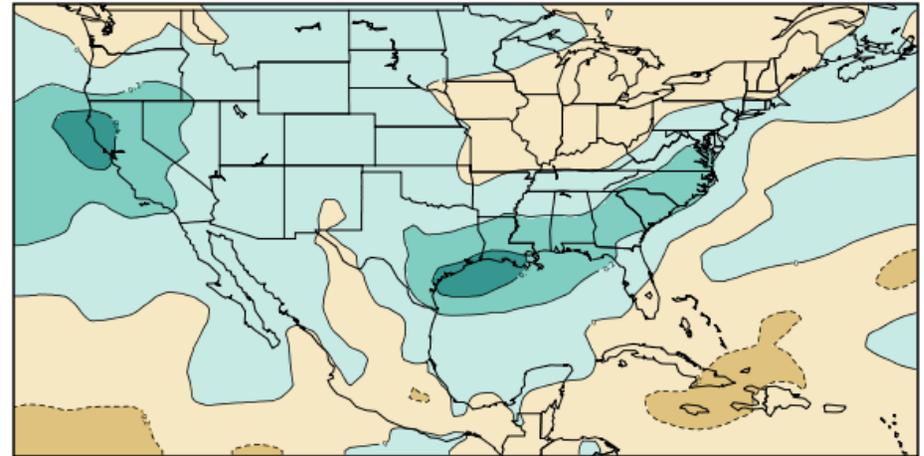


FMA2007 CMAP Precipitation Anomaly vs. All Model, All Ensemble Average FMA2007 (Aug2006 and Dec2006 IC) Precipitation Anomaly (*note color scale change for model images)

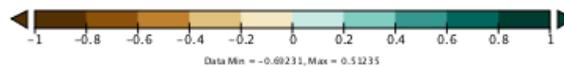
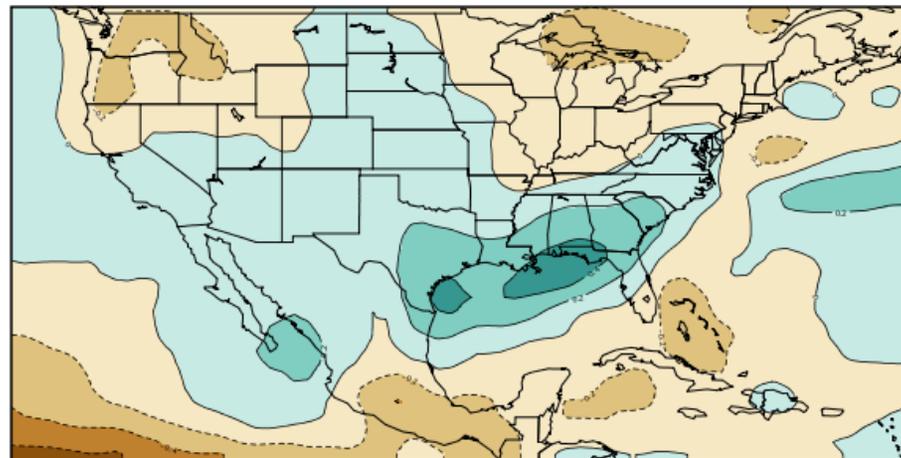
CMAP Precipitation Anomaly for FMA 2007



All Model, All Ensemble Average of Aug2006 IC, FMA 2007 Seasonal Average of Precip Anomalies

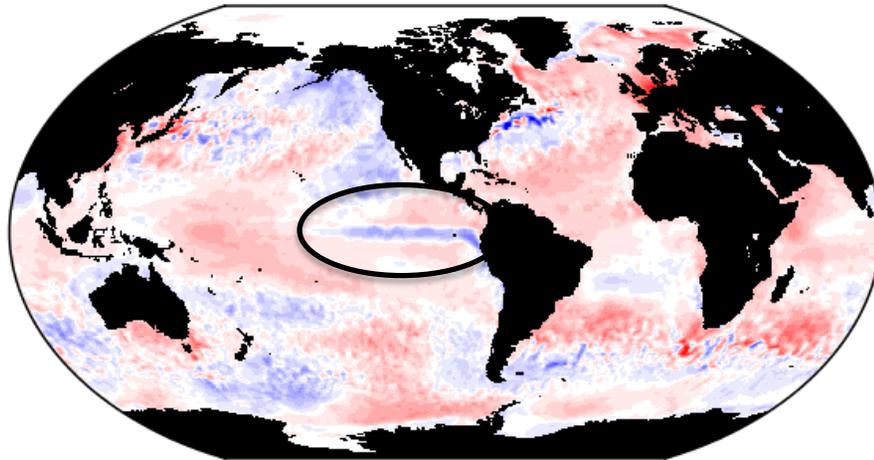


All Model, All Ensemble Average of Dec2006 IC, FMA 2007 Seasonal Average of Precip Anomalies

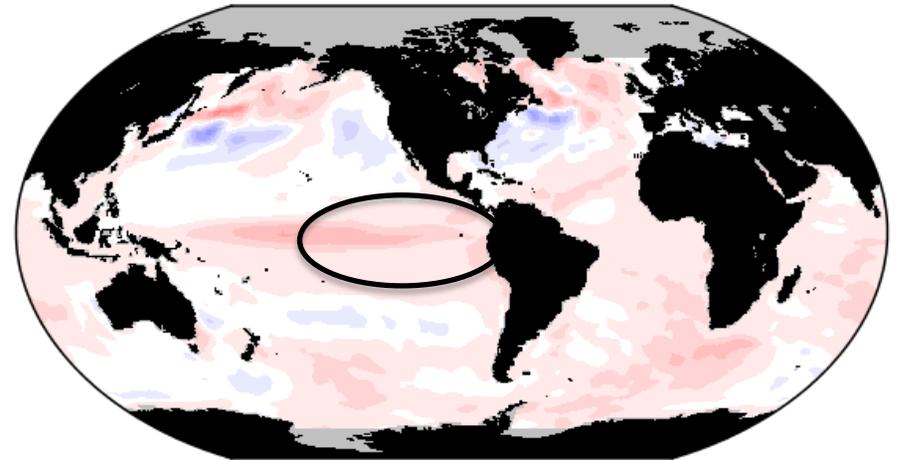


FMA2007 NCDC SST Anomaly vs. All Model, All Ensemble Average FMA2007 (Aug2006 and Dec2006 IC) SST Anomaly

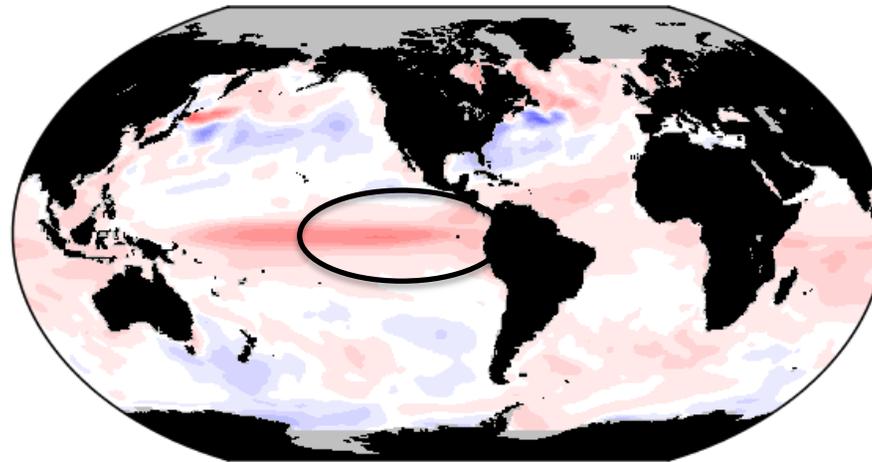
NCDC SST Anomaly, FMA2007 Seasonal Average



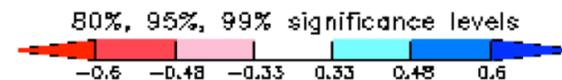
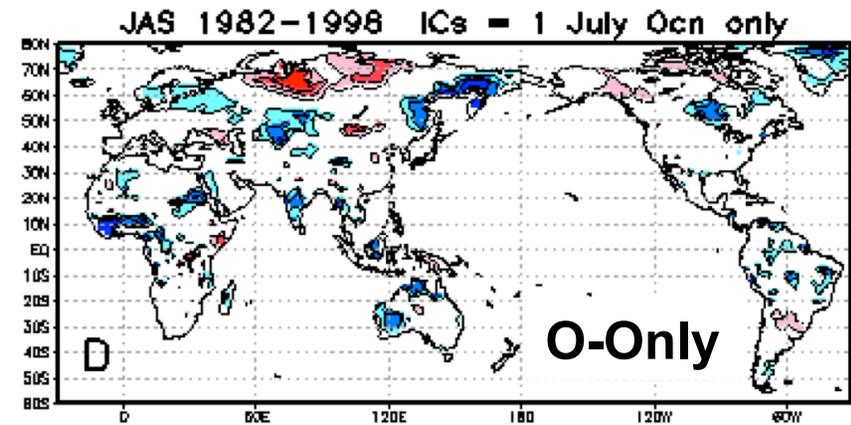
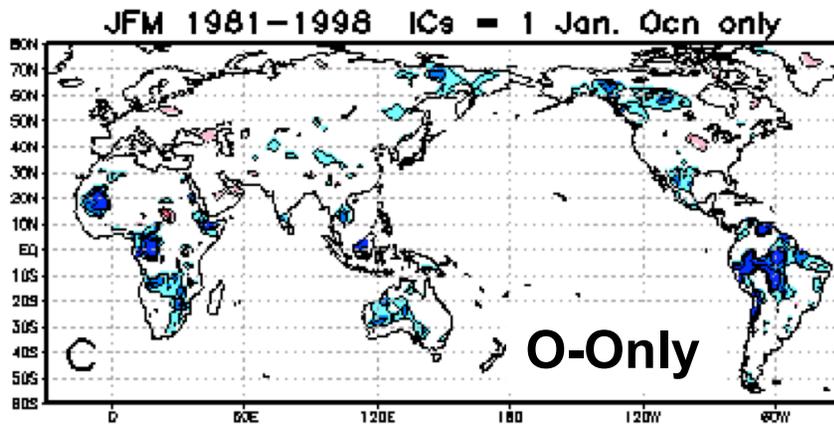
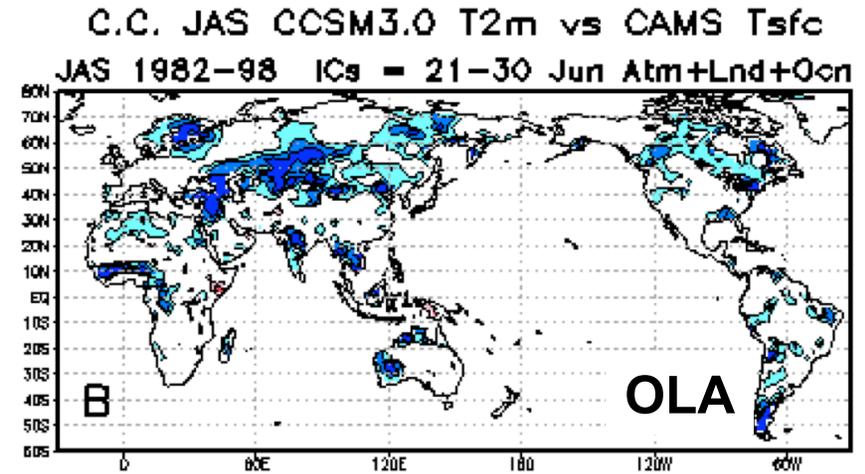
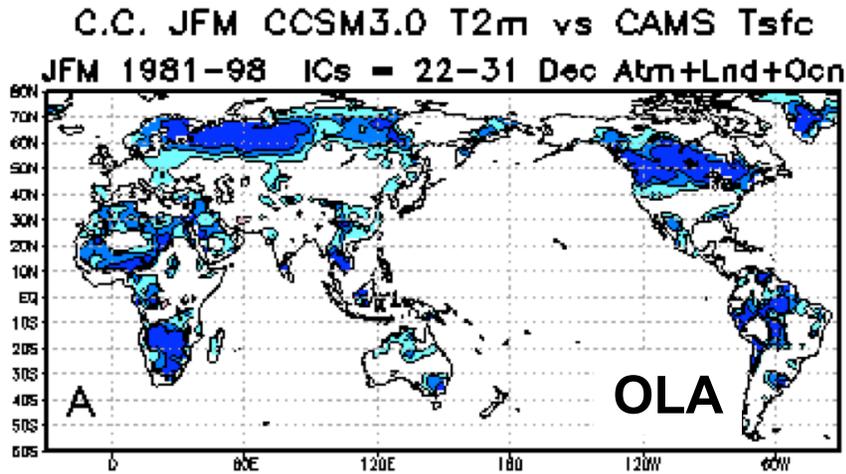
All Model, All Ensemble Average; August 2006 IC, FMA 2007 Seasonal Average SST Anomaly



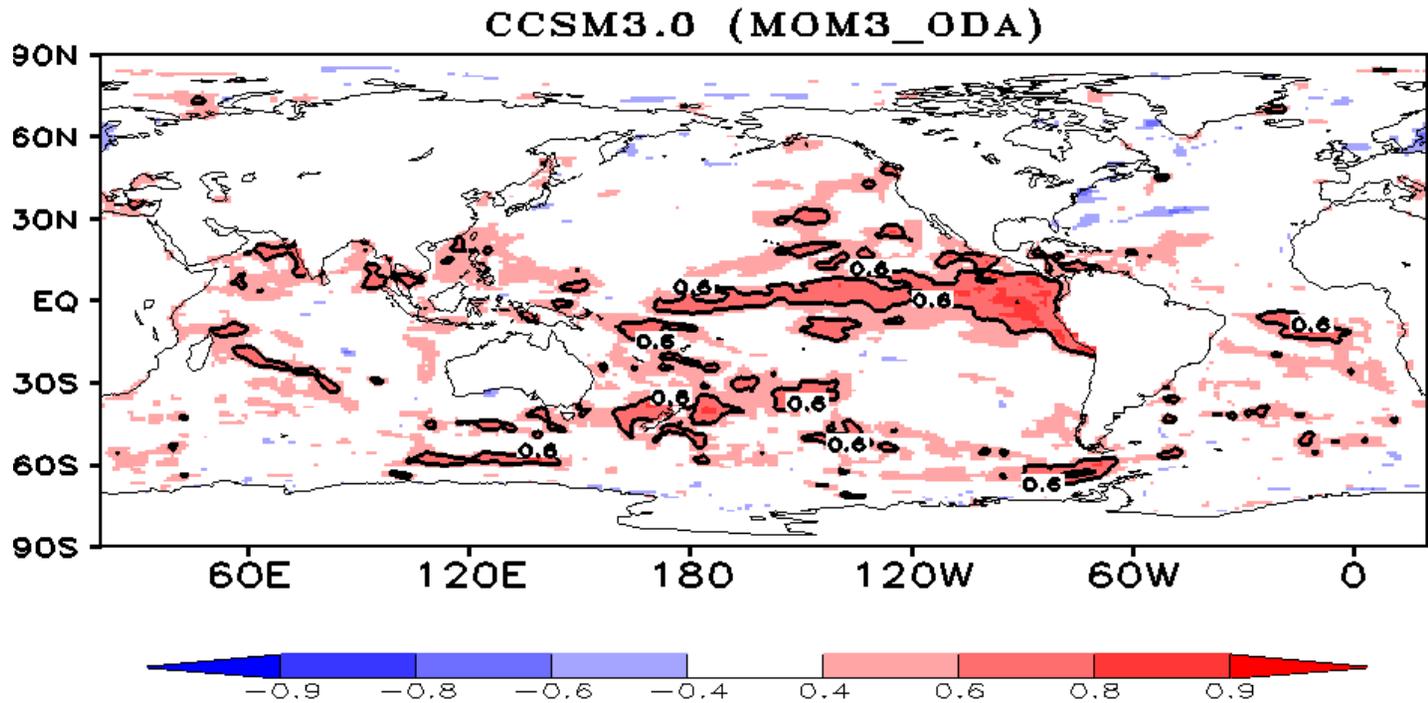
All Model, All Ensemble Average; December 2006 IC, FMA 2007 Seasonal Average SST Anomaly



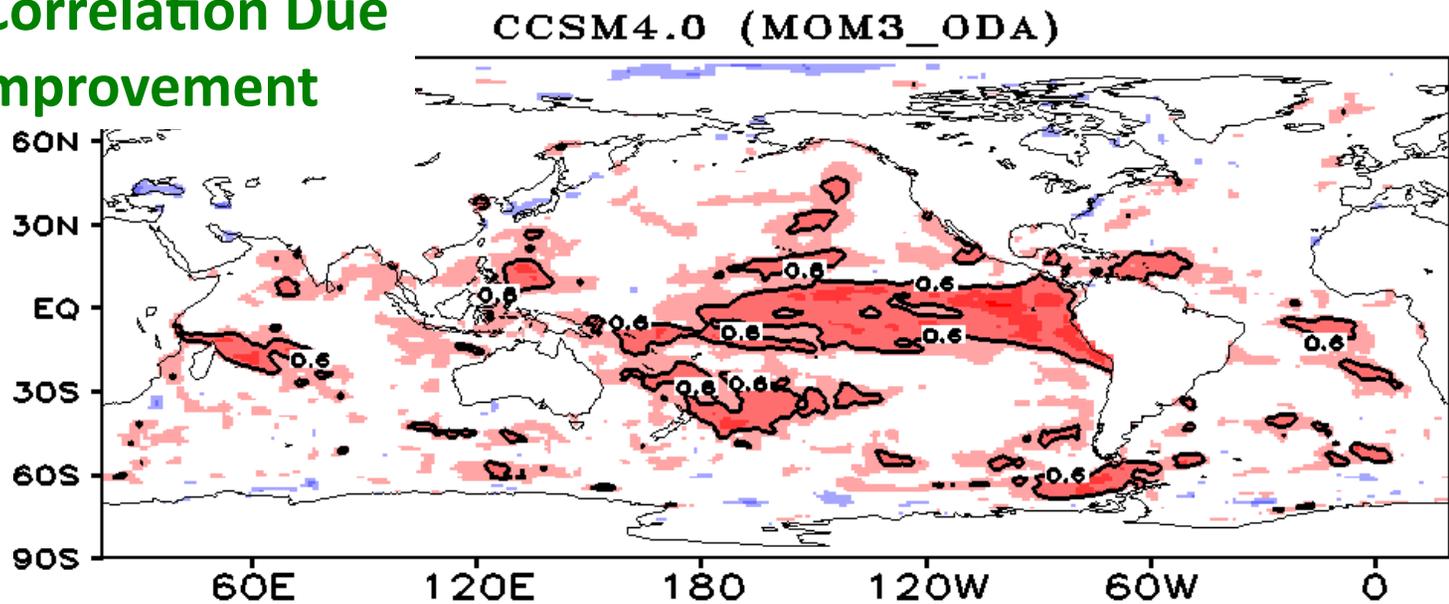
Initialization O-L-A vs Ocean Only



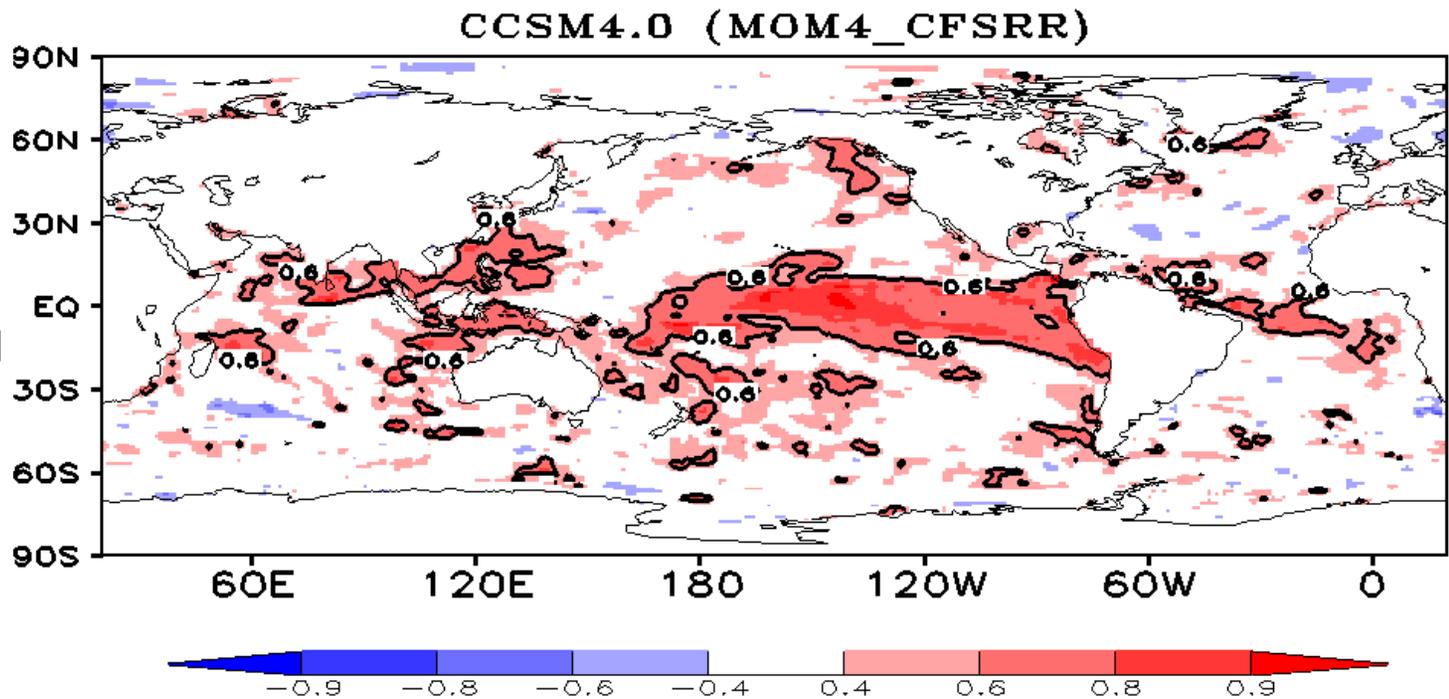
May Initial
Conditions
3-Months Lead



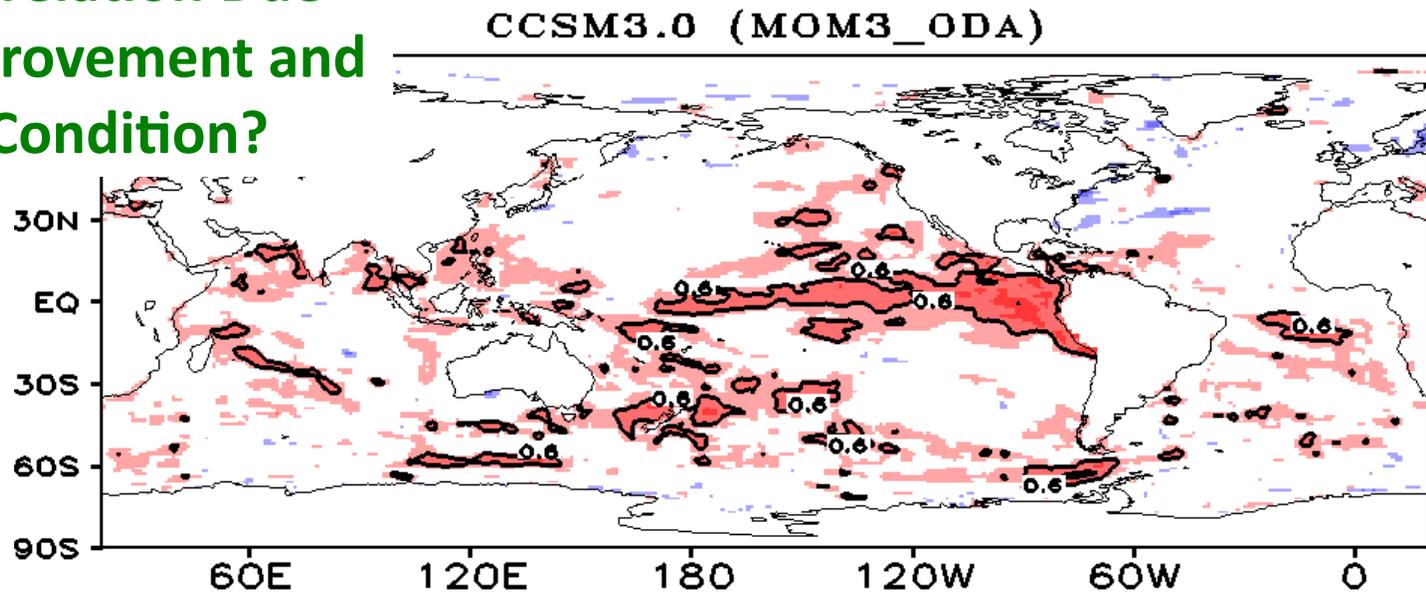
Improved Correlation Due
to Model Improvement



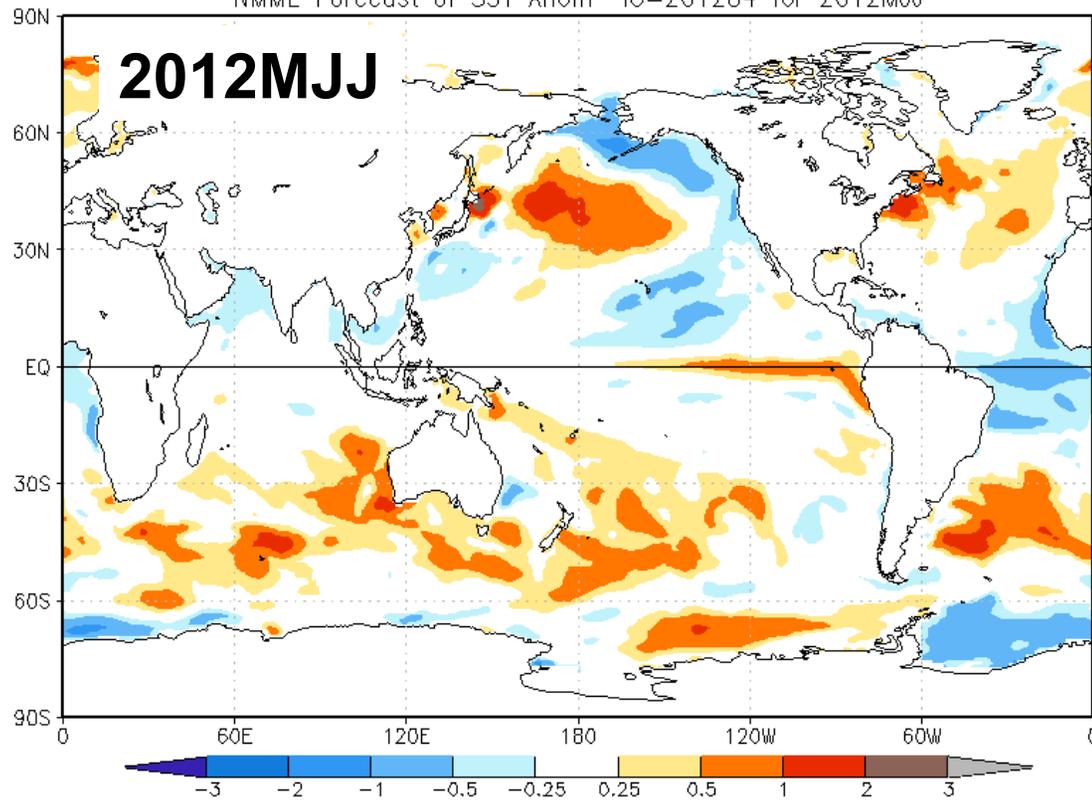
May Initial
Conditions
3-Months Lead



Improved Correlation Due
to Model Improvement and
Better Initial Condition?

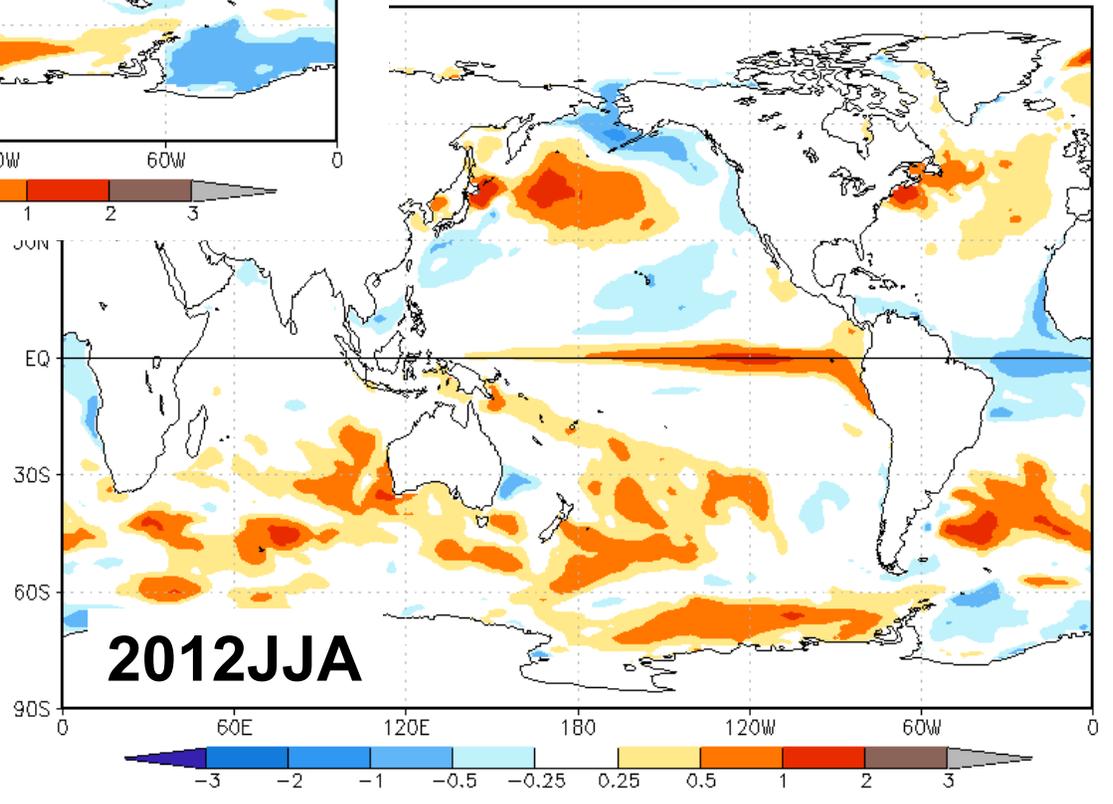


NMME Forecast of SST Anom IC=201204 for 2012MJJ

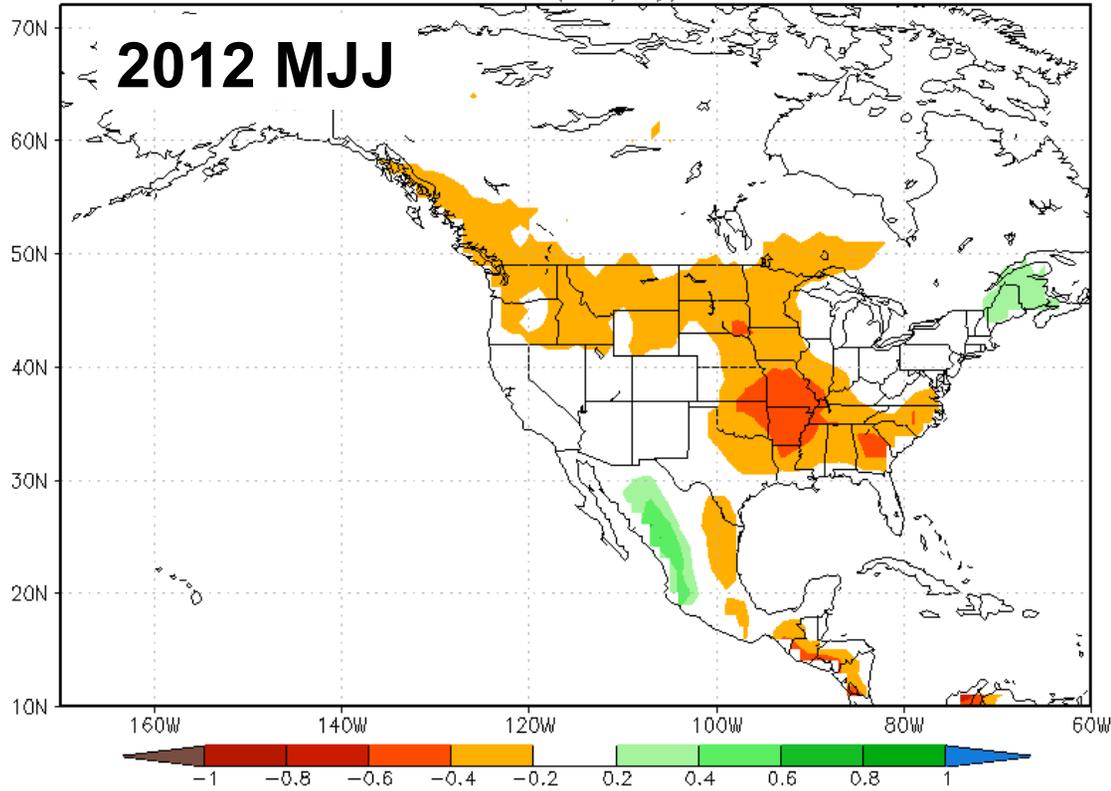


NMME SSTA Predictions April 2012 Initial Conditions

Forecast of SST Anom IC=201204 for 2012JJA

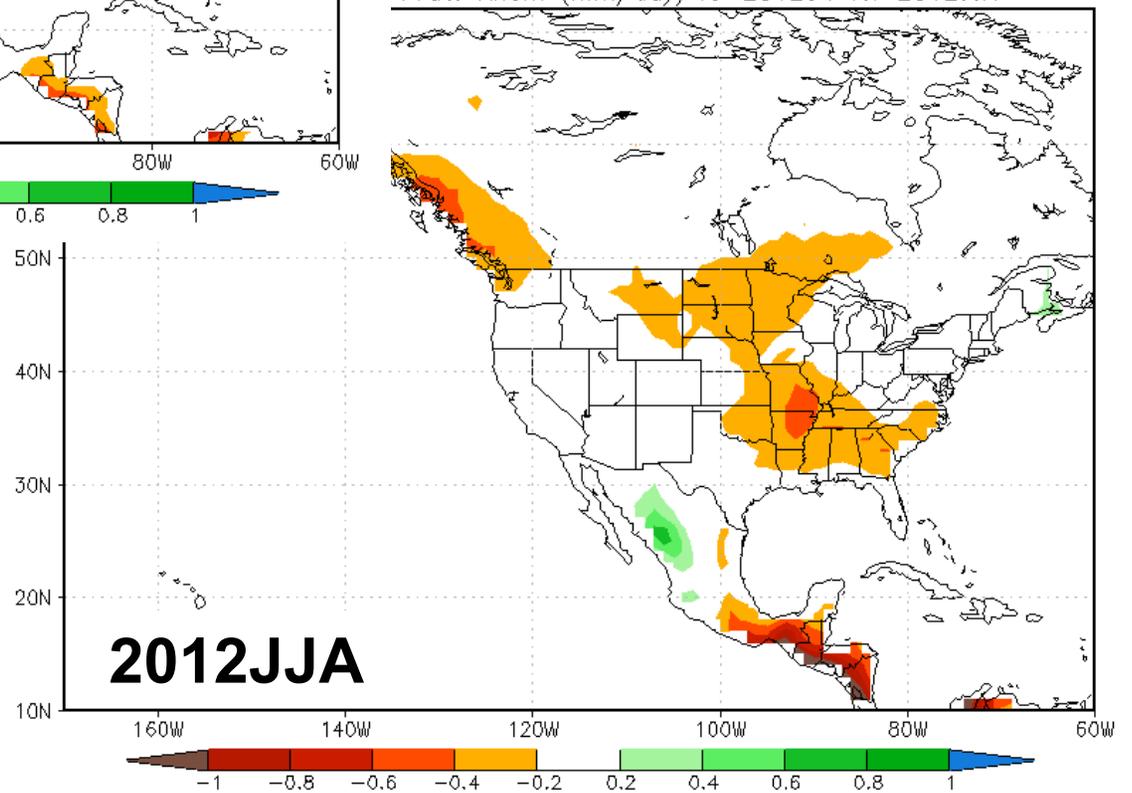


NMME Forecast of Prate Anom (mm/day) IC=201204 for 2012MJJ



NMME Precip Predictions April 2012 Initial Conditions

Prate Anom (mm/day) IC=201204 for 2012JJA



NMME Forecast for Nino 3.4 IC= 201204

